

REMARKS

Claims 12-14 have been cancelled subject to Applicants' right to refile this non-elected subject matter in a divisional application..

Claims 1-11 and 15-16 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over AMANN, et al. The Examiner was unpersuaded by Applicants previous argument that AMANN does not teach the use of a halide because AMANN teaches using "chloride peroxidase." The Examiner continues by stating that it "would have been obvious to use this halide with other peroxidases as they are obvious variants of each other."

The presently claimed invention does not work unless a halide is present as well as a peroxidase. A chloride peroxidase oxidizes chloride to hypochlorite. It is not, nor does it contain, a halide. Therefore, AMANN does not teach or suggest the present invention which includes a halide. Further information about chloride peroxidase is attached.

In view of the foregoing, Applicant submits the Application is now in condition for allowance and respectfully requests early notice to that effect.

Respectfully submitted,



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**Title** High-resolution proton nuclear magnetic resonance spectroscopy of chloride peroxidase: identification of new forms of the enzyme

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**Resource/ Doc Type** Journal Article

**Resource Relation** Biochemistry ; Vol/Issue: 4

**Subject** 550200 -- Biochemistry ;400104 -- Spectral Procedures-- (-1987); PEROXIDASES-- NUCLEAR MAGNETIC RESONANCE; CYANIDES;DEUTERIUM;FUNGI;IRON COMPLEXES;PH VALUE;PORPHYRINS;WATER

**Related Subject** CARBOXYLIC ACIDS;COMPLEXES;ENZYMES;HETEROCYCLIC ACIDS;HETEROCYCLIC COMPOUNDS;HYDROGEN COMPOUNDS;HYDROGEN ISOTOPES;ISOTOPES;LIGHT NUCLEI;MAGNETIC RESONANCE;NUCLEI;ODD-ODD NUCLEI;ORGANIC ACIDS;ORGANIC COMPOUNDS;ORGANIC NITROGEN COMPOUNDS;OXIDOREDUCTASES;OXYGEN COMPOUNDS;PLANTS;PORPHYRINS;RESONANCE;STABLE ISOTOPES;TRANSITION ELEMENT COMPLEXES

**Description/ Abstract** Chloride peroxidase from the mold *Caldariomyces fumago* in the native high-spin iron(III) and low-spin cyanoiron (III) states has been subjected to high-field proton nuclear magnetic resonance spectroscopic measurements. Signals shifted well outside the diamagnetic envelope by the paramagnetic iron(III) center are surprisingly insensitive to pH changes over the range from pH 3 to pH 7. The previously identified major form of chloride peroxidase (form A) and the minor form (B) show very similar chemical shift patterns. Of greatest significance, however, is the discovery that each of the separable forms of the enzyme exhibits splitting of porphyrin ring methyl resonances. The appearance of two sets of signals in both native and cyanide-complexed enzyme is best explained by the existence of two additional forms of the A and B isoenzymes. Structural differences for the newly identified forms of chloride peroxidase must be located in the vicinity of the heme prosthetic group.

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